ASRTUSPECIFICATIONFORTYRECURINGBLADDER
(forpre-curedretreadingprocess)

0.0 SPECIFICATIONNO. :AS:293:80:MAY:2013

1.0 SCOPE:

This standard prescribes requirements and methods of testing for Tyre Curing Bladder.

This is a purchase specification and does not include manufacturing details. The parts/material supplied against this specification shallbe compatible with the original equipment.

The supplier shall provide detail drawings and specifications to the purchasing/ inspecting authority whenever such information is specifically called for.

Thematerialofferedagainstthisspecificationshallconformtothisspecificationi n full.Thetestsshallbecarriedoutonthepartdirectlyoronthespecimenprepar ed fromthecomponents'.Ifanyofthesamplesfailinanyoneormoretestsspecifi ed in Table 1, the sample shallbe considered asnot havingmet the requirementsof this specification.

It is the manufacturer's prime responsibility to satisfy the inspection authoritythat thecommodityconformstothisstandard.Thismaybeaccomplishedbyperfor ming the tests specified in this standard.

Sample selection shall be the responsibility of the Quality Assurance Officer. Required quantity for complete testing as per this specification shall be supplied.

ThisspecificationsupersedesearlierspecificationNo.AS:293:61:OCT:2000

2.0 APPLICATIONANDREFERENCE:

This specification covers the requirements of Tyre Curing Bladder used for Pre- curedRetreadingProcess ofPneumatic Tyres having nominal sizeof9.00x 20

,10.00x20,7.50x16,8.25x16usedon automobiles.

ThefollowingIndianStandardsarenecessaryadjunctstothisstandard.

SpecificationNo.	Year	Title
IS:3400(Part1)	1987	Methods of test for vulcanised rubber. Tensile stress/strain properties (Second revision)
IS:3400(Part2)	1980	Hardness(Firstrevision)Reaffirmed1991
IS:3400(Part4)	1987	Acceleratedageing(Secondrevision)
IS:3400(Part22)	1984	Methodoftestsforvulcanizedrubber Chemical Analysis.Reaffirmed 1990
IS:9081	1992	Automotive Vehicles – Valves & Valve Accessories for Pneumatic Tyres – Specification.
IS:10939	1984	DesignationofValvesforPneumatic Tyres

3.0 TESTS&REQUIREMENTS:

TestQuantity:

Minimumonesampleshallbesuppliedfortesting.

Workmanship shall be of the qualitythat the Tyre CuringBladder is free from any defectwhichaffecttheappearanceorimpairitsserviceabilitysuchasseparationof bondoradhesionaroundthevalvestem,airpockets,orvisiblelackofadhesion in butt or lap splices, incorrect or damaged valves, and air bubbles, cracks or other faults in its outer surface when installed in thetyre, which in turn, is used for its intendedpurpose.Inflatedbladdershallnotshowanyairleakagewhentested as detailed below in 3.4.

TheTyreCuringBladdershallhaveuniformthicknessandbesymmetricalinshape and designed to fit properlyin tyreshavingnominalsize of 9.00 x20 ,10.00x20, 7.50x16, 8.25x16.

The Tyre Curing Bladder with valve shall be inflated to just round out giving circumferentiallengthof300Cmsfor9.00x20,10.00x20&240cmsfor7.50x16, 8.25x16.approximatelyandtestedunderwaterforevidenceofanyleakageonthe

bladder surface, joints and through valve.

The Tyre Curing Bladder shall not show any leakage or defective workmanship whichmayimpairairtightness.Failingtomeetthisrequirementthebladdersh allbe considered for rejection.

Bulging:

When Tyre Curing Bladder is inflated to just round out i.e. 305 Cm for 9.00x 20 / 10.00x20and245cm7.50x16/8.25x16approx.circumference,thecross-sectional diameter shall be measured at four places at 90^0intervals away from joints.The variation in cross sectional diameter shall not be more than 10%.

MinimumPermissibleThickness:

Thethicknessofthebladderatanypointshallnotbelessthan3mmoftheaverage gaugeofthe16readingstakenonthetestspecimen.Measurethethicknessof the specimenusingdialthicknessgauge.Thethicknessofeachtestspecimenshallbe gaugedateachoffourpoints,i.e.crowncentre,basecentre,rightsidewallcentre and left side wall centre.

OutsideCross-SectionalPeriphery:

Outside Cross-sectional Periphery (Girth) of the curing bladder may be 49 to 54 cms. When measured as detailed below:

Todetermineconformitytoabove,avoidingspliceandventareas,fourspecimens each 2.5 cm wide, shall be cut squarelyacross the bladder.The first shallbe cut some distance away from the valve and the other three shall be cut at 90 degree intervalstherefrom.Eachofthefour2.5cmwideringsshallbelaidonflatsurface intheoriginalmouldedshapeofthebladdercrosssectionandmeasuredwitha flat steeltape, around the outside of thesection.Theaverageof fourmeasurements shall be taken as the outside cross sectional periphery OR

Each of the four specimen obtained shall be cut squarely across the width away from the centre of the base or centre of the crown.They shall be laid on a flat surface,withwhatwaspartoftheoutsideODtheinnertubeuppermost.These four surfaces shall be measured for length and their average taken as the cross- sectional periphery.

Valve:

TyreCuringBladdershallbeequippedwithsuitablevalveconformingtoIS:9081.

Material:

TyreCuringBladderinsizesshallbemadefromanappropriaterubbercomposition having excellent heat air ageing properties in air, steam water, hot flexproperties and resistance to growth in service.The finished product shall be usable for 80 curings min.
Therubberhydrocarboncontentshallnotbelessthan55%weightbyweight.

Testing:

The methods of testing shall be those specified in Table 1 against each requirement.

4.0 MARKINGS:

EachCuringBladdershallbepermanentlymarkedwiththemanufacturer’snam e, trade mark and size.

5.0 PACKING:

Materialshallbesuitablypackedtoavoiddamageduringtransit/handling.

TABLE1

Sr. No.	Characteristics	Requirements	Methodof Test IS:3400
1.	VisualExamination	Shall be permanently engravedasdetailedinCl. 4.1	-
2.	AirTightness	No air leakage shall be observedfromthetube or valve (Clause 3.4).	-
3.	Buldging	The variation in cross sectional diameter shall not be more than 10%.	-
4	Thickness,mm,Min.	3.0	-
5	AshContent, Max.	4.0	Pt22
6	RubberHydrocarbonContent, %,W/W,Min.	55.0	-
7	SpecificGravity	1.10to1.14	
8	Hardness,ShoreA(Max.)	60	Pt2
9	Pulloutstrengthofrubberbase for valve breaking load Kgf. Min.	175	IS:9081-1985 Cl.5.4
10	TensileStrength,Kgf/ Cm^2,Min.	100	Pt1
11	Elongationatbreak,%,Min.	525	Pt1
12	StrengthofSplice,Kg/Cm^2, Min.	80	Pt1
13	Change in physical properties afteracceleratedageingat170 $\pm 2^0$Cfor24hours		Pt4
(a)	TensileStrength,%,Max.	-80	Pt1
(b)	Elongationatbreak,%,Max.	-50	Pt1
14	TensionSet,(50%elongation at170$\pm 3^0$Cfor8hrs.),%Max.	80	Pt17 Cl.6.3

WEIGHTAGE MARKS FOR TYRE CURING BLADDER
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Sr. No.	Properties	Clause	Marks Allotted	P/T
1.	Visual Examination (IdentificationMarkings)	3.2and 4.1	3	T
2.	AirTightness	3.4	2	T
3.	Bulging	3.5	5	P
4.	Thickness	3.6	2	T
5.	HydrocarbonContent	3.9	9	P
6.	AshContent	3.10(4)	3	P
7.	SpecificGravity	3.10(5)	2	P
8.	Hardness	3.10(6)	2	P
9.	Pulloutstrengthofrubber base for valve	3.10(7)	2	P
10.	TensileStrength	3.10(8)	15	P
11.	Elongation	3.10(9)	10	P
12.	Strengthofsplice	3.10(10)	10	P
13. a) b)	Acceleratedageing ChangeinTensileStrength ChangeinElongationat Break	3.10(11) 3.10 (11a) 3.10 (11b)	15 15	P P
14.	Tension Set (PermanentSet)	3.10(12)	5 ------ 100	P

P=Proportionatemarksshallbeconsidere

d T = Total marks shall be considered